

## CHAPTER 3: DOMESTIC ANIMAL ISSUES

Rabies is a viral disease that affects mammals. Often it is wild animals that are affected, but domestic animals, livestock, and humans are also at risk. Domestic animals pose a potential “bridge” from wildlife to humans, so protecting domestic animals from rabies is particularly important for safeguarding human health.

The incubation period (the time between exposure to the virus and the development of symptoms) differs for different species. Scientific studies about the progression of rabies have guided recommendations about the vaccination and quarantine of domestic animals and livestock.

Massachusetts law requires that all dogs, cats and ferrets be vaccinated against rabies (MGL c. 140, s. 145B). Compliance with the vaccination requirements is critical to prevent the transmission of rabies. The Department of Food and Agriculture (MDFA), Bureau of Animal Health (BAH), is authorized to control the spread of rabies in domestic animals (330 CMR 10.00). Specifically with regard to ferrets, the Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE), Division of Fisheries and Wildlife (DFW) has this same authorization. Much of the activity to control transmission of rabies in domestic animals focuses upon action at the local level.

**Questions concerning domestic animals, such as issues of quarantine, should be addressed to the Bureau of Animal Health at (617) 626-1794. Questions concerning ferrets, including the quarantine of ferrets, should be addressed to the Department of Fisheries, Wildlife and Environmental Law Enforcement (MDFWELE), Division of Fisheries and Wildlife (DFW) at (617) 626-1591.**

The objectives of domestic animal rabies prevention activities are:

- To assure that all dogs and cats are vaccinated against rabies;
- To respond effectively to incidents involving domestic animals which expose a human or other domestic animal;
- To respond effectively to incidents involving domestic animals which are exposed to a potentially rabid animal;
- To create a uniform and effective system to respond to reports of rabies transmission to domestic animals; and
- To discourage the indiscriminate killing of healthy domestic animals as a rabies control measure.

### **A. Local Animal Control Activities**

Every city and town must designate an Animal Inspector who will coordinate appropriate responses to suspected transmission of rabies to domestic animals with MDFA (MGL c. 129, ss. 15, 16). Animal Inspectors are authorized to isolate and confine domestic animals suspected of being exposed to rabies. Acting according to state regulations and guidelines, Animal Inspectors must:

- Investigate reports of domestic animals exposed to rabies.
- Determine if the domestic animal has or may have been exposed to a rabid animal, and if the domestic animal has been properly vaccinated.
- Make an evaluation of the exposure of the vaccinated animal and prescribe the appropriate action according to state regulations.
- Obtain permission to euthanize exposed, unvaccinated animals from their owners or from the MDFA.
  - a) Carry out euthanasia permitted by the owner or MDFA.
  - b) Collect the head of the euthanized animal and deliver or send it to MDPH State Laboratory Institute, if the animal has bitten or otherwise exposed a human or domestic animal.
- Ensure that vaccinated domestic animals receive a booster vaccination if needed, and that the animal remains under appropriate strict confinement or isolation.
- Contact local officials when exposed domestic animals have exposed humans.

## **B. Pre-Exposure Vaccination of Domestic Animals**

Local governments should initiate and maintain effective programs to ensure the vaccination of dogs and cats. They should also urge vaccination of other domestic animals, particularly livestock. Animal rabies vaccinations should be administered only by, or under the direct supervision of, a licensed veterinarian. This is the only way to ensure that a responsible person can be held accountable to assure the public that the animal has been properly vaccinated. Within one month after primary vaccination, a peak rabies antibody titer is reached and the animal can be considered immunized. An animal is considered immunized if it was initially vaccinated at least 30 days previously, and all initial and subsequent vaccinations have been administered in accordance with vaccine manufacturer's recommendations.

### **1. Dogs and Cats**

All dogs and cats should be vaccinated against rabies in accordance with Massachusetts law (MGL c. 140, s. 145B). Regardless of the age at initial vaccination, a second vaccination must be given 9-12 months later. After that, vaccinations can be given using a USDA approved 3-year vaccine every three years.

### **2. Livestock**

All species of livestock are susceptible to rabies; cattle and horses are among the most frequently infected of all livestock. There are currently available USDA-approved vaccines for cattle, horses and sheep. These animals can be vaccinated as early as three months of age and re-vaccinated in accordance with vaccine manufacturer's recommendations. Consideration should be given to the vaccination of livestock, especially animals that are particularly valuable and/or may have frequent contact with humans. The Bureau of Animal Health may order the euthanasia of livestock exposed to rabies if the animal is unvaccinated or if vaccinated with a vaccine not approved by the USDA for that species.

The MDPH document, *Recommendations for Petting Zoos, Petting Farms, Animal Fairs, and other Events and Exhibits where Contact Between Animals and the Public is*

*Permitted* (Attachment 6) contains a summary of recommendations to reduce human exposures to rabies through livestock.

### **3. Wild Animals and Wild Animals Crossbred to Domestic Animals**

No rabies vaccine is licensed for use in wild animals or wild animals crossbred to domestic animals, including wolf/dog (canid) hybrids and wild/domestic (felid) cat hybrids. Even if such an animal is vaccinated, it will not be considered vaccinated in the event that the animal is involved in a possible exposure incident. If a suspect animal is encountered, DFW personnel will determine the biological status of the animal. If the animal is determined to be a domestic cat or dog, it will be handled according to MDFA procedures. If the animal is determined to be a hybrid, it will be handled according to DFW quarantine and euthanasia procedures. This procedure is in accordance with Massachusetts law (MGL c. 131, ss. 25A-25C).

### **4. Rodents and Lagomorphs**

No rabies vaccine is licensed for use in wild or domestic rodents or lagomorphs.

### **5. Ferrets**

All ferrets should be vaccinated in accordance with Massachusetts law (MGL c. 131, s. 77). There is currently a USDA-approved vaccine for ferrets. Ferrets can be vaccinated as early as three months of age and should be re-vaccinated annually. Quarantine of ferrets falls under the jurisdiction of the Department of Fisheries, Wildlife and Environmental Law Enforcement.

## **C. Management of Domestic Animals Exposed to Rabid or Suspected Rabid Animals**

The local Animal Inspector manages the confinement of a domestic animal that has been exposed to wildlife. The Animal Inspector must notify the owner of the exposed domestic animal in writing using the *Notice of Possible Exposure to Rabies and Quarantine Order* (Attachment 7) distributed by the Department of Food and Agriculture.

### **1. High Risk Animals and Special Word About Bats**

Wild animals considered to be high risk for transmitting rabies include: raccoons, bats, skunks, foxes, woodchucks, and coyotes. If the wild animal is available, it should be euthanized, decapitated, and the head transported to the MDPH State Laboratory Institute for rabies testing. Testing of other wild animals that have been exposed to domestic animals should be evaluated on a case by case basis.

Bats represent a particular risk because their bites or scratches may be very small and owners of domestic animals may not recognize that an exposure has occurred. If a bat was physically present in a room and the first responder or Animal Control Officer cannot rule out that a domestic animal, or especially a human, was bitten, scratched, or had a mucous membrane exposure to the bat, the Massachusetts Department of Public Health recommends safely capturing the bat and testing it for rabies. Health officers, Animal Control Officers and first responders should develop a protocol for responding to citizen calls when a bat is found in a home. First responders should be trained not to release a bat until a careful evaluation has excluded the potential for domestic animal and especially human exposure to the bat. Information on how to safely capture a bat is available by following the "Bats & Rabies" link at the CDC web site at <http://www.cdc.gov/ncidod/dvrd/rabies/>.

## **2. Dogs and Cats**

The Department of Food and Agriculture table for *Management of Dogs and Cats Exposed to Wildlife* provides guidelines for managing dogs and cats exposed to suspect rabid wildlife (Attachment 8). Management varies depending on the vaccination status of the dog or cat and the type of exposure.

## **3. Livestock**

All livestock rabies exposures should be reported immediately to the Bureau of Animal Health. Livestock exhibiting signs of abnormal behavior or which have been exposed to a rabid animal should be suspected of rabies. Under no circumstances should anyone place their hands in the oral cavity of such animals in an effort to examine or medicate. A veterinarian or the Bureau of Animal Health should be contacted for advice.

Livestock bitten by a confirmed rabid animal and currently vaccinated with a vaccine approved by the USDA for that species should be revaccinated immediately and placed under strict confinement for 45 days. During this quarantine period, the animal must:

- Be kept under confinement to prevent escape; and
- Not be sold or relocated without permission of the Bureau of Animal Health.

If the livestock escapes, the Animal Inspector or the Bureau of Animal Health should be notified immediately.

If bitten by a *confirmed* rabid animal, unvaccinated livestock or livestock vaccinated with a vaccine not approved by the USDA for that species, should be euthanized immediately. If the owner is unwilling to have this done, the animal should be kept under strict confinement for six months. During this period the animal must:

- Be kept in a secure stall or pen separate from other animals and humans;
- Have limited contact with humans, i.e., limited to one or two caretakers; and
- Not be moved from the premises except with permission of the Animal Inspector or the Bureau of Animal Health.

If the livestock escapes, the Animal Inspector and the Bureau of Animal Health should be notified immediately.

## **4. Wild Animals Crossbred to Domestic Animals**

Wild animals crossbred to domestic animals (e.g., wolf/dog hybrids and wild/domestic cat hybrids) that are exposed to wildlife should be euthanized immediately, regardless of vaccination history. There is no vaccine licensed for use in these animals, and the incubation period of rabies in these animals is unknown. Therefore, confinement and isolation are not appropriate.

## **5. Rodents and Lagomorphs**

Rodents and lagomorphs exposed to wildlife should be euthanized immediately. If the owner is unwilling to have this done, the animal should be kept under strict confinement for six months.

## **6. Ferrets**

The Division of Fisheries and Wildlife should be consulted regarding any ferret exposed to a rabid or suspected rabid animal. Management varies depending on the vaccination

status of the ferret and the type of exposure. In general, DFW quarantine recommendations for ferrets mirror the MDFA dog and cat quarantine recommendations.

#### **D. Management of Domestic Animals Exposed to other Domestic Animals**

Massachusetts law requires that dogs and cats that bite other domestic animals be quarantined for 10 days (MGL c. 129, s. 21). The local Animal Inspector manages the confinement of a domestic animal that has exposed another domestic animal. The Animal Inspector is nominated by the local Board of Health and appointed by the Department of Food and Agriculture, Bureau of Animal Health.

##### **1. Dogs and Cats**

The Massachusetts Department of Food and Agriculture (MDFA) table for *Management of Dogs and Cats Exposed to other Domestic Animals* provides guidelines for managing dogs and cats exposed to other domestic animals (Attachment 9). Requirements vary depending on the availability of the involved animals for quarantine.

##### **2. Livestock**

The management of livestock follows the activities that would occur in the case of a dog or a cat. Livestock that bite other domestic animals should undergo a 10-day quarantine period (MGL c. 129, s. 21). The Animal Inspector will determine the location and enforcement of the quarantine. If the livestock escapes and is unable to be observed for a 10-day period, the Animal Inspector should be notified immediately.

If the livestock is euthanized before the end of the 10-day quarantine period, it must be decapitated and the head examined for rabies by the MDPH, State Laboratory Institute Virology Laboratory. Responsibility for sending or delivering the head to the MDPH State Laboratory Institute is determined within the city or town.

Provided that the quarantined animal does not exhibit signs of rabies, the following can continue:

- Milking of rabies vaccinated dairy cows
- Shearing

### **3. Rodents and Lagomorphs**

Rodents (hamsters, guinea pigs, gerbils, rats and mice) and lagomorphs (rabbits and hares) are rarely infected with rabies. If they are exposed by another domestic animal, the exposing animal should be quarantined for 10 days. If that animal is unavailable for quarantine, those procedures outlined for rodents or lagomorphs exposed to suspect rabid animals should be followed.

### **4. Ferrets**

Ferrets can be infected with rabies. In the event of a domestic animal exposure, a ferret should be quarantined for a ten-day period, regardless of vaccination status. Quarantine of ferrets falls under the jurisdiction of DFW. In general, DFW quarantine recommendations for ferrets mirror the MDFA dog and cat quarantine recommendations.

## **E. Management of Domestic Animals that Expose Humans**

All exposures by dogs, cats and other domestic animals must be reported to the local health department and Animal Inspector serving the town where the biting animal is housed or kept for evaluation. The MDPH algorithm for *Management of Human Exposures to Suspect Rabid Animals* (Attachment 2) includes information for evaluating human exposures, initiating prophylaxis, and submitting specimens for testing.

### **1. Dogs and Cats**

Massachusetts law requires that dogs and cats that expose humans be quarantined for 10 days (MGL c. 129, s. 21). The Animal Inspector will determine the location and enforcement of the quarantine. The Department of Food and Agriculture table for *Management of Dogs and Cats Which Expose Humans* provides guidelines for managing dogs and cats that bite or scratch humans (Attachment 10).

If the animal dies or is euthanized before the end of the 10-day quarantine period, it must be decapitated and the head examined by the MDPH, State Laboratory Institute, Virology Laboratory for rabies. Responsibility for sending or delivering the head to the State Laboratory Institute is determined within the city or town. If the dog or cat escapes and is unable to be observed for a 10-day period, the Animal Inspector and local health department should be notified immediately. Exposures by domestic animals (including farm animals) that are not available for observation need to be evaluated on an individual basis (Attachment 2).

### **2. Livestock**

The management of livestock generally follows the activities that would occur in the case of a dog or a cat. According to MDFA requirements, livestock that bite humans warrant a 10-day quarantine period (MGL c. 129, s. 21). There has not been a documented case of transmission of rabies from livestock to humans. However, there have been no scientific studies on shedding time in most livestock to confirm that the shedding of virus is limited to ten days before the livestock dies from rabies. (Studies have been conducted for dogs, cats, ferrets and cattle.) Therefore, depending on the species of animal involved and the circumstances of the exposure, MDPH epidemiologists may request that MDFA have the animal tested for rabies rather than place it under quarantine, or if that is not possible, will recommend that the human undergo post-exposure treatment. The Animal Inspector will determine the location and enforcement

of the quarantine. If the livestock escapes and is unable to be observed for a 10-day period, the Animal Inspector and local health department should be notified immediately.

If the livestock dies or is euthanized before the end of the 10-day quarantine period, it must be decapitated and the head examined for rabies by the MDPH State Laboratory Institute, Virology Laboratory. Responsibility for sending or delivering the head to the State Laboratory Institute is determined within the city or town.

Provided that the quarantined animal does not exhibit signs of rabies, the following can continue:

- Milking of rabies vaccinated dairy cows
- Shearing

### **3. Wild Animals Crossbred to Domestic Animals**

There is no vaccination licensed for use in these animals, and the period of rabies virus shedding in these animals is unknown. Therefore, quarantine is not appropriate. Wolf/dog hybrids that expose humans should be euthanized, regardless of vaccination history and regardless of whether or not the bite was provoked. Healthy wild/domestic cat hybrids which have been housed exclusively indoors and have not been exposed to any potentially rabid animals for the past six months or more pose no risk.

### **4. Rodents and Lagomorphs**

- a) Wild rodents, lagomorphs, and other small mammals except bats: Rodents (squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats and mice) and lagomorphs (rabbits and hares) are rarely found to be infected with rabies and have not been known to cause rabies in humans in the United States. Woodchucks, however, are an exception and from 1992 to 2001 accounted for 2% of all positive animals in Massachusetts and 93% of all positive rodents in Massachusetts. For this reason, exposures by woodchucks should be handled no differently than exposure by other high-risk animals. Beavers have occasionally been reported to be rabid in the United States.

*Provoked Exposure:* If the exposure was provoked (such as through feeding, petting, or playing with the animal) and the animal appeared healthy, it is unlikely that the animal was rabid at the time of the exposure and most experts would not recommend treatment. However, since rare cases of rabies in rodents do occur, the animal could be submitted for testing if available.

*Unprovoked Exposure:* If the exposure was unprovoked or the animal appeared unhealthy, it should be submitted for testing. If the animal is unavailable for testing, the healthcare provider should consider post-exposure rabies treatment.

- a) Healthy caged rodents and lagomorphs such as hamsters, gerbils, rats, mice and rabbits which have been caged **exclusively** indoors for the past six months or more, which have no history of receiving an off-label modified live rabies vaccine, and which have not been exposed to any potentially rabid animals for the past six months pose negligible risk for being rabid.
- b) Rodents and lagomorphs caged outdoors: In Massachusetts there has been one case of a rabbit caged outdoors developing rabies after exposure to a rabid skunk. Rodents and lagomorphs caged outdoors may be attacked by rabid animals but may be protected enough by the cage to survive the attack. If a human is exposed to a

rodent or lagomorph caged outdoors, submitting the animal for testing should be considered.

## **5. Ferrets**

Ferrets have occasionally been found to be infected with rabies in the US. In the event of a human exposure, a ferret should be quarantined for a 10-day period, regardless of vaccination status.

## **F. Submission of Specimens to the Massachusetts Department of Public Health (MDPH) State Laboratory Institute (SLI) for Rabies Testing**

The MDPH Bureau of Laboratory Sciences revised guidelines for submission of specimens for rabies testing are attached (Attachment 11). Attachment 11 includes a cover letter to Boards of Health, a *Specimen Submission Form for Rabies Testing* and guidelines for specimen submission.

Decisions about who is responsible for transporting or sending specimens to the MDPH State Laboratory Institute should be made locally.

## **G. Other Resources**

A *Useful Rabies Contact Information* page is attached (Attachment 12). This list provides telephone numbers and internet addresses for key agencies providing information on rabies or other resources.

## **H. Compendium of Animal Rabies Prevention and Control**

The most recent edition of the *Compendium of Animal Rabies Prevention and Control*, published by the National Association of State Public Health Veterinarians (NASPHV), provides recommendations that serve as the basis for animal rabies control programs (Attachment 13). The *Compendium* contains recommendations for immunization of domestic animals, a list of all USDA-licensed animal rabies vaccines, and information regarding rabies control.